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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,039	03/23/2004	David H. Meikrantz	B-424	5651

7590 02/26/2007  
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EXAMINER
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VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
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1754

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/808,039	Applicant(s) MEIKRANTZ ET AL.	
	Examiner Timothy C. Vanoy	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 21-25 and 27-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 43 is/are allowed.
- 6) ☒ Claim(s) 21-25 and 27-42 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>Feb. 15, 2007</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>Nov. 14, 2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

a) Claim 30 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of independent claim 21. Claim 21 has limited the solvent to "consist essentially of" a number of recited components, whereas applicants' independent claim 30 improperly broadens claim 21 by reciting that the solvent "further comprises" another component which is not recited in claim 21.

Therefore, claim 30 improperly broadens claim 21.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21-25 and 27-42 are again rejected under 35 U.S.C. 103(a) as being unpatentable over the article titled "Development of a Solvent Extraction Process for Cesium Removal from SRS Tank Waste" by Ralph A. Leonard et al. in view of the article titled "Extraction of Lead and Strontium from Hazardous Waste Streams by Solvent Extraction with 4', 4', (5')-Di-(t-Butyldicyclohexo)-18-Crown-6" by Donald J. Wood et al.

The Leonard et al. article describes the removal of cesium from solutions via contact with calyx[4]arene-bis(tert-octylbenzo-crown-6) (i. e. "BoBCalixC6") along with a modifier, such as 1-(1,1,2,2-tetrafluoroethoxy)-3-[4-(tert-octylphenoxy)-2-propanol (i. e. Cs-3): please see the paragraph bridging pgs. 744 and 745 in this Leonard et al. article. The Leonard et al. article also discloses that 1-(2,2,3,3,-tetrafluoropropoxy)-3-(4-sec-butylphenoxy)-2-propanol (i. e. Cs-7SBT) as well as trioctyl amine (i. e. TOA) were also part of the solvent (please see pg. 758 and Fig. 8 on pg. 759), as required by at least applicants' claims 21 and 30.

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The difference between the applicants' claims and the Leonard et al. article is that the applicants' claims also call for the removal of strontium with a liquid comprising 4',4', (5')-di-(t-butyldicyclo-hexano)-18-crown-6.

The abstract of the Wood et al. article describes the use a liquid comprising 4',4', (5')-di-(t-butyldicyclo-hexano)-18-crown-6 to extract strontium from a liquid.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the process described in the Leonard et al. article by including the 4',4', (5')-di-(t-butyldicyclo-hexano)-18-crown-6 taught in the abstract of the Wood et al. article into the extraction solvent of the Leonard et al. article because of the expected advantage of extracting strontium. Please note that the courts have already determined that the selection of a known material based on its suitability for its intended purpose supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. vs. Interchemical Corp.* 325 U. S. 327, 65 USPQ 297 (1945) discussed in section 2144.07 in the MPEP 8<sup>th</sup> Ed. Rev. 3 Aug. 2005. In this case, the "intended purpose" is the extraction of strontium (as taught in the Wood et al. article and required by the applicants' claims) and the "known material" is the 4',4', (5')-di-(t-butyldicyclo-hexano)-18-crown-6 (as taught in the Wood et al. article and required in the applicants' claims).

Claim 43 has not been rejected under either 35USC102 or 35USC103 because there is no suggestion in the references of record to modify the process described in the Wood et al. article cited and applied in the 35USC103 rejection by including 1-(2,2,3,3-

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tetrafluoropropoxy)-3-(4-sec-butylphenoxy)-2-propanol in the extraction solvent of the Wood et al.

### ***Response to Arguments***

Applicants' arguments submitted with the Amendment filed on Jan. 23, 2007 have been fully considered but they are not persuasive.

a) *The applicants argue that since Leonard teaches a solvent that includes BoBCalixC6, Cs-7SB, trioctylamine and Isopar L and since Wood teaches a solvent that includes DtBu18C6, TBP and Isopar L, the cited references do not teach or suggest contacting an acidic solution with a solvent that consists essentially of the components recited in claim 21.*

The argument is not persuasive because applicants' claim 30 clearly sets forth that the solvent further comprises trioctyl amine (i. e. TOA). The scope of applicants' claim 30 casts doubt on whether or not the solvent of applicants' claim 21 really "consists essentially of" the components recited in applicants' claim 21, in the manner argued by the applicants. Thus all the pieces of the puzzle are brought together by the Leonard and Wood references. The Leonard article discloses a solvent containing the BoBCalixC6, Cs-7SBT and TOA (please see pg. 758 in Leonard), as set forth in at least applicants' claims 21 and 30 for the purpose of removing cesium from solutions. The Wood article discloses a solvent containing the DTBu18C6 (please see the abstract of the Wood article), as set forth in at least applicants' claim 21 for the purpose of removing strontium from a liquid. Thus, it would have been obvious to merely add the

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DTBu18C6 of the Wood reference into the solvent of the Leonard reference only to arrive at a solvent that produces the expected advantage of removing both cesium and strontium from the liquid: please note that the courts have already determined that such selection of a known material based on its suitability for its intended purpose supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. vs. Interchemical Corp.* 325 U. S. 327, 65 USPQ 297 (1945) discussed in section 2144.07 in the MPEP.

b) *The applicants argue that cited references do not provide a motivation to combine to produce the claimed invention. The mere fact that the references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. There is nothing in Leonard that suggests the desirability of using CtBu18C6 in its solvent composition. Wood does not suggest the desirability of using DtBu18C6 in the solvent composition of Leonard.*

The argument is not persuasive because one of ordinary skill in the art when faced with the problem of removing both cesium and strontium from a liquid would immediately envision the combination of the recited solvent components of Leonard for the removal of cesium with the DtBu18C6 of the Wood reference for the removal of strontium only to provide a solvent with the expected advantage of removing both the cesium and strontium. The argument appears to be a piecemeal analysis of the references individually. The courts have already determined that "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle": please see the

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discussion of the *Sinclair & Carroll Co. vs. Interchemical Corp.* 325 U. S. 327, 65 USPQ 297 (1945) court decision in section 2144.07 in the MPEP.

c) *The applicants argue that the claimed invention provides unexpected results. As described in paragraphs 0033, 0048, 0049 and 0054-0061 in the as-filed specification, a solvent that includes DtBu18C6, TBP, BoBCalixC6, Cs-7Sb, trioctyl amine and Isopar L did not effectively extract cesium and strontium, and this solvent is identical to that which would be produced by combining the solvent compositions of Leonard and Wood. In contrast, a solvent composition that consists essentially of BoBCalixC6, DtBu18C6 and Cs-7SB (as recited in claim 21) results in higher distribution ratios for the cesium and strontium. The increased distribution ratios indicate that the solvent of applicants' claim 21 provides improved coextraction of cesium and strontium as compared to that produced by combining the respective solvent compositions of Leonard and Wood.*

In view of the limitations of applicants' claim 30, it appears that the solvent of applicants' 30 may embrace the use of the TBP of the Wood reference and applicants' claim 30 specifically calls for the presence of tri octyl amine. Therefore, the scope of the applicants' claims are not consistent with the examples used to allege unexpected results.

d) *The applicants argue that each of claims 22-25 and 27-42 is allowable, inter alia, as depending from an allowable base claim, and the applicants submit that the references of the cited references do not teach or suggest the limitations of each of the dependent claims.*



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The base claim 21 is not allowable and the applicants have not further limited the base claim 21 with any of the limitations of the dependent claims that the applicants allege are allowable in order to put it in a form that the applicants consider allowable. The dependent claims are obvious from the Leonard and Wood references: for example, the trioctyl amine limitations of applicants' claim 30 are expressly taught on pg. 758 in the Leonard reference.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Timothy C Vanoy*  
Timothy C Vanoy  
Primary Examiner  
Art Unit 1754

tv